

## *Hydrobiomorpha casta* (Say) in Virginia (Coleoptera: Hydrophilidae)

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The first known Virginia records of a species of water scavenger beetle are reported here. *Hydrobiomorpha casta* (Say) was not listed in the recent review of Virginia's Hydrophilidae (Matta, 1974). This insect is known from North and South Carolina (Brigham, 1982), other southeastern states, Cuba, and Mexico to Panama (Bachmann, 1988; Mouchamps, 1959; Spangler, 1973; Jasper & Vogtsberger, 1996). It is the only species of *Hydrobiomorpha* (known in earlier literature as *Neohydrophilus*) that occurs in North America. Its discovery in Virginia adds another genus to the known fauna of the state.

### NEW RECORDS AND COMMENTS

The following specimens (in the collections of U.S. National Museum of Natural History and Virginia Museum of Natural History) from three localities in southeastern Virginia represent the known northern limits of this tropical species. Two are labeled "Va. Princess Anne Co., 3 Mi S. Creeds, u. v. lt. 21-VIII-1971, M. Druckenbrod"; one is labeled "Oceana, Va. Beach, Va., June 5, 1974, Coll: W.A.A. Sewage area"; five are labeled "VIRGINIA: Prs. Anne Co., Sandbridge Beach, 22-23 August 1987, W. E. Steiner, J. M. Hill & J. M. Swearingen". A number of southern animals and plants reach their northern limits in this part of Virginia (personal observations).

Interestingly, two of the above collections were taken at black light during the same time of year. The series from Sandbridge Beach was, according to field notes on 22

August 1987, collected at a black light and sheet hung at the back dune edges of the beach strand, facing inland to a marsh behind a dense shrub zone. Temperature at dark was about 24°C and sky was cloudy, with occasional wind gusts.

All specimens from both samples taken at light were teneral, indicating that they probably came from a breeding site nearby, and also that (in Virginia) fully grown larvae of *H. casta* likely occur in mid-summer. The larva of this species was described (Spangler, 1973) using a third-instar specimen taken in Alabama in early July. In eastern Texas, a larva was taken in late August (Jasper & Vogtsberger, 1996).

Exemplified here is the value of using black light to complement other collecting methods used in insect surveys. In spite of intensive net-sampling in the state's tidewater area (Matta, 1974), this relatively large beetle had not been detected. While the presence of a species at black light is not informative in identifying the habitat of origin, it results in detection of "rare" species not easily found by other methods. This can alert the specialist to the occurrence of a particular habitat (or host species) in the area, or indicate a need for more sampling in selected habitat types. The recent use of submerged bottle traps has been proven successful in taking series of *H. casta* (Jasper & Vogtsberger, 1996) and beetles also came to lights at the same sites.

In Florida, Young (1954) infrequently found *H. casta* in a variety of lentic habitats "in the flatwoods" and "never found it in large numbers". Texas specimens were collected from a pond and brackish marshes described in

detail by Jasper & Vogtsberger (1996). All known localities for the species in the southern U.S.A. are in low coastal areas. In the NMNH material, the greatest number of collection records are from Florida. The largest series, taken since Young's (1954) work, are labeled as being taken at light or blacklight. All specimens reported from Mississippi were also taken at lights (Testa & Lago, 1994).

#### CHARACTERS AND IDENTIFICATION

Using the key to hydrophilid genera of Virginia (Matta, 1974), *Hydrobiomorpha* keys to *Hydrochara* (couplet 6). North American members of these two genera are very similar in size and appearance, with the body being only slightly more flattened and narrow in the former, as illustrated by White, et al. (1984) and Testa & Lago (1994). The following couplet should be inserted so as to separate these taxa:

- 6a. Anterior margin of clypeus broadly emarginate, with pale band of membrane broadly exposed along base of labrum.....*Hydrobiomorpha* Blackburn  
Anterior margin of clypeus truncate, with pale band of membrane very narrow and inconspicuous along base of labrum .....*Hydrochara* Berthold

In addition to the shape of the clypeus (figured by Brigham, 1982 and White, et al., 1984), the male genitalia of *Hydrobiomorpha casta* are unusually ornate and distinctive (see Bachmann, 1988). There are also generic differences in the antennal club, prosternal process and pattern of punctures and pores on the labrum (Leech & Chandler, 1956; Testa & Lago, 1994). Hansen (1991) has most recently characterized the genera on a worldwide basis.

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#### LITERATURE CITED

- Bachmann, A. O. 1988. Las especies Americanas de *Hydrobiomorpha* (Coleoptera: Hydrophilidae). *Opera Lilloana* 36:1-63.
- Brigham, W. U. 1982. Aquatic Coleoptera. Pp. 10.1-10.136 in: Brigham, A. R., W. U. Brigham & A. Gnillka, eds. Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.
- Hansen, M. 1991. The Hydrophiloid Beetles. Phylogeny, classification and a revision of the genera (Coleoptera, Hydrophiloidea). *Biologiske Skrifter, Det Kongelige Danske Videnskabernes Selskab* 40:1-368.
- Jasper, S. K. & R. C. Vogtsberger. 1996. First Texas records of five genera of aquatic beetles (Coleoptera: Noteridae, Dytiscidae, Hydrophilidae) with habitat notes. *Entomological News* 107(1):49-60.
- Leech, H. B. & H. P. Chandler. 1956. Aquatic Coleoptera. Pp. 293-371 in Usinger, R. L., ed. *Aquatic Insects of California*. University of California Press, Berkeley.
- Matta, J. F. 1974. The Insects of Virginia. No. 8. Aquatic Hydrophilidae of Virginia (Coleoptera: Polyphaga). Virginia Polytechnic Institute and State University, Research Division Bulletin 94:1-44.
- Mouchamps, R. 1959. Remarques concernant les genres *Hydrobiomorpha* Blackburn et *Neohydrophilus* Orchymont (Coleopteres Hydrophilides). *Bulletin et Annales de la Société Royale d'Entomologie de Belgique* 95(11-12):295-335.
- Spangler, P. J. 1973. A description of the larva of *Hydrobiomorpha casta* (Coleoptera: Hydrophilidae). *Journal of the Washington Academy of Sciences* 63(4):160-164.
- Testa, S. & P. K. Lago. 1994. The aquatic Hydrophilidae (Coleoptera) of Mississippi. Mississippi Agricultural and Forestry Experimental Station Technical Bulletin 193:1-71.



White, D. S., W. U. Brigham & J. T. Doyen. 1984. Aquatic Coleoptera. Pp. 361-437 in Merritt, R. W. & K. W. Cummins, eds. An Introduction to the Aquatic Insects of North America. Second Edition. Kendall-

Hunt, Dubuque, Iowa.

Young, F. N. 1954. The water beetles of Florida. University of Florida Biological Series 5(1):1-238.

## Shorter Contributions

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LEAF-CARRYING WITH THE TAIL IN THE VIRGINIA OPOSSUM, *DIDELPHIS VIRGINIANA*. — The Virginia opossum, *Didelphis virginiana*, is well known for its long, scantily haired, prehensile tail used for grasping in climbing activities and, for example, the grasping of the tail of the mother by young. Although leaf carrying with the tail had been reported in captive animals (Pray, 1921; Layne, 1951; Hopkins, 1977) and in a wild setting (Smith, 1941), I was unaware of such use until I made the observation described herein. The phenomenon seems to be little known among biologists.

At 0700 h on 4 July 1992, while looking out the window into my wooded back yard in suburban Chesterfield County, Virginia, I saw what appeared to be a severely injured Virginia opossum. It was unusual to see an opossum active in daylight and I assumed its behavior to be the result of an injury. Only 10 to 12 m away and moving among a few low shrubs and past tree trunks, the opossum appeared to have a rough-shaped mass under its tail that looked like protruding viscera. The opossum walked irregularly, frequently stopping, and with its back hunched would reach back with its head under the belly between its legs and appeared to be grabbing at the mass under its tail.

I then realized that the mass grew larger each time the opossum reached back. It was placing leaves under its belly with its mouth and then grasping them with its tail. The opossum ambled out of sight relatively rapidly when the bulk of material (in lateral view) was equal to what I estimated to be about one third the size of its body; much larger than the mass depicted in the accurate sketch by Pray (1921). From close-range observations, Smith (1941)

and Layne (1951) noted that the opossum used its hindlegs to help pass the material and settle it in the tail loop. I did not see this. The opossum I observed appeared to be an adult, but leaf carrying with the tail is not restricted to adults. Smith (1941) observed a "slightly more than half grown" individual, Layne (1951) a "young male opossum," and Hopkins (1977) reported on young "estimated to be 88 to 97 days old" that "weighed about 121 g."

It had rained more than 1.5 cm in the 24 hr preceding my observation and, although partly sunny at 0700 h, the leaves on the ground were wet. It is likely that the opossum was collecting leaves to construct a nest or add to a pre-existing one. Opossums construct nests in a variety of situations including arboreal sites. Since they are known to build nests of coarse leaf material, it is possible that carrying leaves and similar items is a common use of the prehensile tail but one that we rarely get to observe because they normally are nocturnal. McManus (1974) summarized that leaf carrying with the tail "...frees the limbs for locomotion," but it likely has other functions as well. Nesting material is carried in the mouth by most mammals and leaf carrying by the tail by the Virginia opossum also frees the mouth for opportunistic feeding. Layne (1951) and Hopkins (1977) observed that captives sometimes paused to feed or drink while clutching the nesting materials in their tails.

### Literature Cited

Hopkins, D. 1977. Nest-building behavior in the immature Virginia opossum, *Didelphis virginiana*. *Mammalia* 41:361-362.

Layne, J. N. 1951. The use of the tail by an opossum. *Journal of Mammalogy* 32:464-465.